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ABSTRACT

The effects of conventional classroom instruction, television instruction alone, and the combination of classroom and television instruction on the learning of science content and vocabulary by 470 sixth-grade students was tested. The three treatment groups were pre- and posttested to determine the degree of achievement each group attained. The effectiveness of the three treatment groups was determined on the basis of the percentage of students at three levels of achievement: high achievement, moderate achievement, and no achievement. The effect of instructional television on student achievement in science appeared to be related to the use of this medium by the classroom teacher. The combination of television and classroom instruction resulted in the greatest achievement and in a reduction of low achievers. There was no significant difference in results obtained by classroom instruction alone and televised instruction alone. (Author/JK)

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THE EFFECT OF INSTRUCTIONAL TELEVISION UTILIZATION TECHNIQUES ON SCIENCE ACHIEVEMENT IN THE SIXTH GRADE

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INTRODUCTION

BACKGROUND

The importance of active utilization of instructional television by the classroom teacher has long been recognized by researchers. Kraft (1963) studied the effectiveness of various methods of instructional television utilization on pupil information and vocabulary achievement. She concluded that passive use of television will not yield the learning that occurs when television lessons are supported by varied classroom activity. Furthermore, the National Center for School and College Television (1967) warns that the medium is only as effective as the use of it made by "live" teachers of children in receiving classrooms.

PURPOSE

The purpose of this study was to compare the effects of (1) conventional classroom instruction, (2) television instruction alone, and (3) a combination of classroom and television instruction on the learning of specific science content and vocabulary by sixth-grade students.

METHOD

SUBJECTS

The S_s were 470 sixth-grade school children attending seven elementary schools. Selection of the schools involved grouping schools into categories on the basis of social, economic, and ethnic factors and randomly choosing from each category.

PROCEDURE

Eighteen classroom groups were assigned to three treatment groups:

Group A - in which science instruction came from the classroom teacher only using the State text and other teacher-selected materials. The group had no exposure to the instructional television lesson and the classroom teacher did not use the telelesson guides. A total of 182 S_s were assigned to this group.

Group B - in which science instruction came from instructional television only. This group had no other instruction. A total of 172 S_s comprised this group.

Group C - in which the classroom teacher is involved in preparing students for the television lesson and following up the presentation of the television teacher. 116 S_s were involved in this group.

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All treatment groups received instruction on the same topic -- an introduction to simple machines and the relationships between the effort used to move an object and the distance it is moved. The telelesson involved the use of demonstrations, film clips, superimposed vocabulary words and graphs and was approximately 20 minutes in length. The concepts presented were based on and paralleled those found in the State text.

The three treatment groups were administered a pre-test and a post-test. Both pre- and post-test consisted of ten multiple-choice items based on information found in the State text. Although the pre-and post-tests were not identical, they were equated in terms of content and vocabulary. All groups were pre-tested just prior to instruction and post-tested immediately following treatment.

Achievement was defined as the amount of change from pre-test to post-test. The effectiveness of the three treatment groups was determined on the basis of the percentage of students at three levels of achievement:

HIGH ACHIEVEMENT which was defined as a score on the post-test greater than the average gain for all groups.

MODERATE ACHIEVEMENT defined as a score on the post-test less than the average gain but greater than no gain.

NO ACHIEVEMENT defined as no gain or a negative gain on the post-test.

The effect of each treatment group on student achievement was statistically tested using the chi square test of significance.

RESULTS AND DISCUSSION

Examination of Table 1 reveals the stability of the pre-test instrument in the three treatment groups, the average score being 5 out of 10. For purpose of comparison, the gain percentages reveal that when the classroom teacher combines classroom instruction with television instruction (Group C), the highest achievement was accomplished.

TABLE 1

AVERAGE SCORES ON ACHIEVEMENT TESTS (IN PERCENT)

	GROUP A (N=182)	GROUP B (N=172)	GROUP C (N=116)	TOTAL (N=470)
Pre-test	50.1	49.8	50.7	50.2
Post-test	77.1	73.7	83.8	78.2
Gain	27.1	23.9	33.1	* 28.0

* This score is used to distinguish between high and moderate achievement (See definitions under Procedures).

More revealing than the average scores in each group is the percentage of the three levels of achievement in each treatment group, figure 1. Nearly two-thirds of the students in the teacher-television instruction group were in the high achievement group while only one-tenth made no gain. While the teacher-only group had over half in the high achievement group, it had the largest number of non-achievers. This downward trend of non-achievers with the introduction of instructional television may reflect the value of the medium for the student who has reading problems and needs more visual reinforcement than the average reader.

When the observed differences in achievement among the three treatment groups (figure 1) were subjected to the Chi square test of significance, the following results were obtained.

In comparing conventional classroom teaching with television instruction alone, Group A vs B, the expected was found - - no significant difference ($P > .30$)

In comparing conventional classroom instruction with the teacher-television combination, Group A vs C, a slightly significant difference was found ($P \cong .12$)

The largest difference in achievement was found in comparing the television-only group with the combination group, Group B vs C. The Chi square test revealed a $P < .01$. The implications of such a finding substantiates the need for inservice training of those classroom teachers using instructional television.

In conclusion, the effect of instructional television on student achievement in science appears to be related to the utilization of this medium by the classroom teacher. The combination of the two appear to result in greatest achievement and reduction of low achievers. Further research should be done to study the value of instructional television to students with varying degrees of reading competency.

COMPARISON OF STUDENT ACHIEVEMENT
in the three treatment groups

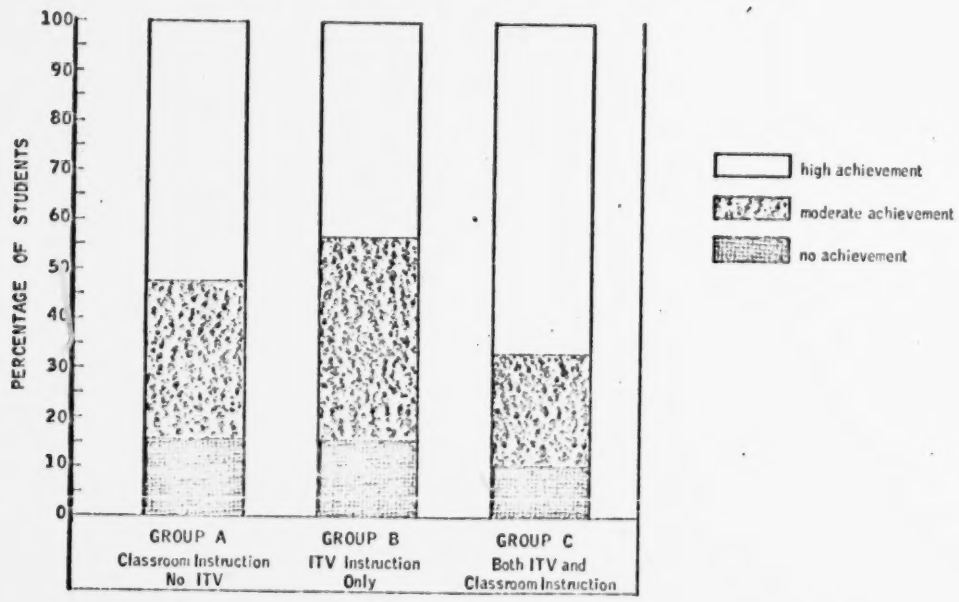

figure 1